

What is claimed:

1. A bit holder for use in road milling, trenching and mining equipment as part of an assembly including a bit, bit holder and bit block, said bit being mountable in a first bore through said bit holder and said bit holder being mountable in a second bore through said bit block, said bit holder comprising:

a bit receiving front portion terminating at an annular flange for engaging a face of said bit block and a shank portion extending axially rearwardly from said annular flange,

said bit receiving front portion including a front annular face including a first bore extending centrally axially therefrom through said bit holder, and outer circumference of said front annular face being substantially identical to a widest outer circumference on said bit,

said bit receiving front portion further including a generally frustoconical surface extending axially from said front annular face toward said annular flange until an outer diameter of said generally frustoconical surface substantially equals an outer diameter of said annular flange, and

a cylindrical surface extending axially from said generally frustoconical portion to said annular flange,

said bit receiving front portion between said front annular face and said annular flange being devoid of any surface extending axially toward said annular flange and radially inwardly from an outer surface thereof.



2. The bit holder as defined in claim 1 wherein an axial line segment along said generally frustoconical surface is convex in shape.

3. The bit holder as defined in claim 1 wherein an axial line segment along said generally frustoconical surface is concave in shape.



4. In combination, a bit holder and a bit block mountable on one of a drum and continuous chain for use in road milling, trenching and mining equipment, said combination comprising:

a bit holder having a generally frustoconical front portion and a shank rear portion, said generally frustoconical front portion including a flat annular nose surface having an axially extending central bore in communication therewith, a frustoconical segment and a cylindrical base, said shank portion extending axially from said cylindrical base,

a bit block including a drum mounting portion and a bit holder mounting portion, said drum mounting portion including a drum mounting surface and a leading forward surface extending at an acute angle from said drum mounting surface, said leading forward surface including an elongate leading ridge and opposed sloping shoulders extending downwardly and outwardly from said leading ridge for efficiently aiding the flow of removed material over and around said bit block drum mounting portion,

said bit holder mounting portion extending from said drum mounting portion being generally cylindrical and including a central bore generally perpendicular to said leading ridge for mounting said bit holder therein, a diameter of said generally cylindrical bit holder mounting portion being substantially identical to a diameter of said bit holder cylindrical base for efficient movement of removed material therearound.

5. The combination as defined in claim 4 wherein a downwardly and circumferentially extended edge of each of said



opposed shoulders defines a juncture between said drum mounting portion and said generally cylindrical bit holder mounting portion.

6. The combination as defined in claim 5 wherein said outer generally cylindrical surface of said bit holder mounting portion, with the exception of said juncture with said drum mounting portion, is devoid of any protrusions that would impede the flow of removed material thereover.

7. The combination as defined in claim 4 wherein said opposed sloping shoulders extend partway circumferentially around said generally cylindrical bit holder mounting portion for deflecting removed material away from a juncture of said drum mounting portion and said bit holder mounting portion.

8. A bit holder for use in road milling, trenching and mining equipment as part of an assembly including a bit, bit holder and bit block, said bit being mountable in a first bore through said bit holder and said bit holder being mountable in a second bore through said bit block, said bit holder comprising:

a bit receiving front portion terminating at an annular flange for engaging a face of said bit block, a shank portion extending axially rearwardly from said annular flange, said shank portion including a declining taper from adjacent said annular flange to adjacent a distal end thereof, said declining taper



providing an interference fit between said bit holder and said bit block,

a pair of radial slots each through one half of said shank portion perpendicular to an axis of said first bore from said outer surface of said declining taper to said axial bore centrally therethrough, said slot extending axially from a position axially inwardly adjacent said distal end of said shank terminating at a predetermined axial distance from said annular flange for providing increased resilience for an outer surface of said declining taper to increase the usable interference fit between said declining taper and said second bore on said bit block by at least about four times a standard interference fit therebetween.

9. The bit holder as defined in claim 8 wherein a pair of radial lands defined as being between said pair of radial slots are sized to provide said interference fit with said bit block bore prior to inserting said shank in said bit block bore.

10. The bit holder as defined in claim 8 wherein a pair of radial land between said pair of radial slots provide a resilient interference fit with said bit block bore while a distal end of said shank maintains its predetermined annular dimensions.



11. In a bit assembly for use in road milling equipment of the type including a bit, a bit holder including a first central bore in which a shank of said bit is mounted, and a bit block including a second bore in which said bit holder is mounted, an improvement comprising:

a cylindrical spacer shaped substantially identical to a shape of said shank on said bit, said cylindrical spacer being mountable in said first central bore between a distal end of said bit shank and a bottom end of said bit holder, a bottom of said cylindrical spacer providing means for receiving a bit removing tool thereon in close approximation to said bottom of said bit holder for aiding in removing said bit from said bit holder.

12. The bit assembly as defined in claim 11 wherein said bit holder includes means in communication with said first central bore for preventing said cylindrical spacer from exiting said first central bore out said bottom of said bit holder.



13. The bit assembly as defined in claim 12 wherein said means for preventing said cylindrical spacer from exiting said first central bore out said bottom of said bit holder comprises:

an elongate axially oriented slot in communication with a cylindrical sidewall of said cylindrical spacer positioned mediate a top and said bottom thereof,

a radially extending bore through an annular sidewall of said shank on said bit holder, and

a cylindrical pin mounted on said radially extending bore and extending into said elongate axially oriented slot on said cylindrical spacer for limiting the sliding movement of said cylindrical spacer in said bit holder central bore.

14. The bit assembly in claim 13 wherein

said elongate axially oriented slot includes at least a portion thereof having a depth greater than a length of said cylindrical pin for accepting said pin when it is desired to remove said cylindrical spacer from said bit holder central bore.



15. A bit holder tool for use in removing a bit holder from a bit block bore, said tool comprising:

a shank portion defining an elongate rod being longer than said bit holder having an enlarged head end and a fastener receiving a distal end, a fastener engageable on said distal end adjacent a bottom of said bit holder, and

a circular disk having a bore centrally therethrough for mounting said shank portion therethrough, said circular disk having a diameter larger than the diameter of said bit holder for providing a surface for impingement of a hammer or chisel thereon to provide an axial force component to said elongate rod to force said bit holder from said bit block.